

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method for determining the position and/or orientation of a creature (3) relative to an environment, ~~characterized in that it comprises that the~~ comprising of steps of:

connecting a creature ~~is connected~~ to a locating member (4) including a transducer (5), the creature and locating member being mechanically connected so that the relative positions and/or orientations of the creature and the transducer are ~~arranged to be~~ known and within a limited distance interval,

operating said transducer ~~determining its~~ to determine the transducer's position and/or orientation with respect to at least two degrees of freedom relative to the environment by the transducer

i) receiving incident optical signals from at least two signal sources (9) located in the environment and by recording the relative incident positions of the received signals on a surface of the transducer, and

ii) calculating and using a direction of each sight line extending between each respective signal source and the transducer

to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment through the use of translation coordinates (x, y, z) or angles of rotation ( $\alpha$ ,  $\beta$  and  $\gamma$ ), and

~~that determining the position and/or orientation of the creature is determined by means of~~ from the transducer's determined position and/or orientation ~~determined for the transducer.~~

2. (currently amended, withdrawn) A method for determining the position and/or orientation of a creature (3) relative to an environment, characterized in that ~~[[it]]~~ the method comprises that the creature is connected to a locating member (4) including a transducer (5) so that the relative positions and/or orientations of the creature and the transducer are arranged to be within a limited distance interval, said transducer determining ~~[[its]]~~ the transducer's position and/or orientation with respect to at least two degrees of freedom relative to the environment by receiving incident signals from at least two signal sources (9) in the environment by means of at least one phased-array and by calculating and using a direction of each sight line extending between each respective signal source and the transducer to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment, and in that the position and/or

orientation of the creature is determined by means of the position and/or orientation determined for the transducer.

3. (withdrawn) A method according to claim 2, characterized in that for said signals microwaves are used.

4. (withdrawn) A method according to claim 2, characterized in that for said signal acoustic waves are used.

5. (currently amended) A method according to claim 1, ~~characterized in that~~ wherein, when the creature (3) moves the position and/or orientation of the creature is repeatedly determined by ~~that~~ the transducer (5) repeatedly ~~determines its~~ determining the transducer's position and/or orientation by receiving incident signals from the signal sources (9) in the environment,

said operating step operates said transducer to determine the transducer's position and/or orientation with respect to at least three degrees of freedom relative to the environment by the transducer, and

said receiving step receives the incident optical signals from at least three signal sources (9) located in the environment and records the relative incident positions of the three received signals on the surface of the transducer, and

said calculating step uses the direction of each sight line extending between each of the three respective signal sources and the transducer to determine the transducer's position and orientation with respect to the at least three degrees of freedom relative to the environment through the use of the translation coordinates (x, y, z) and the angles of rotation ( $\alpha$ ,  $\beta$  and  $\gamma$ ).

6. (currently amended) A method according to claim 1, ~~characterized in that~~ wherein, the position and/or orientation of the creature (3) relative to ~~[[its]]~~ a preceding position and/or orientation of the creature is determined,

said operating step operates said transducer to determine the transducer's position and orientation with respect to at least six degrees of freedom relative to the environment by the transducer, and

said receiving step receives the incident optical signals from at least three signal sources (9) located in the environment and records the relative incident positions of the three received signals on the surface of the transducer, and

said calculating step uses the direction of each sight line extending between each of the three respective signal sources and the transducer for direct angular measurement of the incident signals to determine the transducer's position and orientation with respect to the at least six degrees of freedom relative to the environment through the use of three translation coordinates

(x, y, z) and three angles of rotation ( $\alpha$ ,  $\beta$  and  $\gamma$ ).

7. (original) A method according to claim 1, characterized in that the positions and/or orientations determined for the creature (3) are recorded for mapping the movement of the creature relative to the environment.

8. (original) A method according to claim 6, characterized in that the positions and/or orientations determined for the creature (3) are recorded for mapping the relative movement of the creature.

9. (original) A method according to claim 1, characterized in that when the creature (3) moves relative to the environment at least one property of the environment is recorded and/or mapped.

10. (original) A method according to claim 1, characterized in that said determining of position and/or orientation of the creature (3) is performed while the creature moves in a non-predictable way.

11. (original) A method according to claim 1, characterized in that said determining of position and/or orientation of the creature (3) is performed while the creature

moves in a trained way.

12. (original) A method according to claim 1, characterized in that when the creature (3) moves the movement of the creature is directed by means of the position and/or orientation determined for the creature.

13. (currently amended, withdrawn) A method for locating a phenomenon (22) in an environment, characterized in that [[it]] the method comprises that a creature (3) is connected to a locating member (4) including a transducer (5) mechanically connected to a component (23) intended for pointing out phenomena in the environment, that the pointing component is directed by the creature towards the phenomenon from at least one pointing position, the transducer determining [[its]] the transducer's position and/or orientation with respect to at least two degrees of freedom and thereby determining the position and/or orientation of the pointing component for said at least one pointing position relative to the environment by receiving incident signals from at least two signal sources (9) in the environment and by calculating and using a direction of each sight line extending between each respective signal source and the transducer to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment, and in that the position and/or orientation of the pointed out phenomenon

relative to the environment is determined by means of the position and/or orientation determined for the pointing component.

14. (withdrawn) A method according to claim 13, characterized in that the pointing component (23) is directed by the creature (3) towards the phenomenon (22) from two different pointing positions.

15. (withdrawn) A method according to claim 13, characterized in that the position and/or orientation of the pointed out phenomenon is determined by means of a model (28) of the environment.

16. (currently amended, withdrawn) A method for determining if the position and/or orientation of a phenomenon (22) relative to an environment is in accordance with a reference, characterized in that [[it]] the method comprises that a creature (3) is connected to a locating member (4) including a transducer (5) so that the relative positions and/or orientations of the creature and the transducer are arranged to be within a limited distance interval, that the reference is defined by the introduction of at least one condition regarding the position and/or orientation of the locating member relative to the environment, that the position and/or orientation of the locating member relative to the environment is determined with respect to

at least two degrees of freedom by means of the transducer by receiving incident signals from signal sources (9) in the environment and by ~~recording the relative incident directions of the signals received by means of the transducer~~ calculating and using a direction of each sight line extending between each respective signal source and the transducer to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment, and in that the position and/or orientation determined for the locating member is compared with the reference so that at least one possibly occurring state in which said at least one condition is fulfilled may be recorded.

17. (withdrawn) A method according to claim 16, characterized in that the locating member (4) is put by the creature (3) into mechanical contact with an object (19, 30) in the environment for fixing the locating member or a part thereof and thereby the transducer (5) relative to the object so that said at least one condition is fulfilled.

18. (withdrawn) A method according to claim 17, characterized in that the locating member (4) and the object (19, 30) are moved into engagement with each other so that said at least one condition is fulfilled.



19. (withdrawn) A method according to claim 16, characterized in that states in which said at least one condition is fulfilled is recorded only when a further predefined measure is performed substantially at the same time by the creature (3).

20. (currently amended, withdrawn) A method for determining the position and/or orientation of an object (30) relative to an environment by means of a creature (3), characterized in that [[it]] the method comprises that the creature is connected to a locating member (4) including a transducer (5), that the locating member is put into mechanical contact with the object by the creature, that the position and/or orientation of the locating member relative to the environment is determined with respect to at least two degrees of freedom by means of the transducer by receiving incident signals from signal sources (9) in the environment and by ~~recording the relative incident directions of the signals received by means of the transducer~~ calculating and using a direction of each sight line extending between each respective signal source and the transducer to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment, and in that the position and/or orientation of the object is determined by means of the position and/or orientation determined for the locating member.

21. (currently amended, withdrawn) A method according to claim 20, characterized in that the position and/or orientation of the object (30) relative to ~~[[its]]~~ the object's preceding position and/or orientation is determined.

22. (withdrawn) A method according to claim 20, characterized in that the locating member (4) and the object (30) are moved into engagement with each other for fixing their relative positions and/or orientations.

23. (currently amended) A method according to claim 1, ~~characterized in that it comprises using~~ further comprising the step of:

using a signal receiving direction area~~[[,]]~~ that constitutes a solid angle exceeding ~~[[0,2]]~~ 0.2 steradianes (sr)~~[[,]]~~ and which solid angle is formed by the collected amount of signal receiving directions in which the transducer is arranged to receive incident signals from said signal sources (9).

24. (original) A method according to claim 23, characterized in that the signal receiving direction area constitutes a solid angle that exceeds 1 steradian.

25. (original) A method according to claim 23, characterized in that the signal receiving direction area

constitutes a solid angle that exceeds 2 steradians.

26. (original) A method according to claim 23, characterized in that the signal receiving direction area constitutes a solid angle that exceeds 4 steradians.

27. (currently amended) A method according to claim 23, ~~characterized in that it comprises~~ further comprising using of said signal receiving direction area which is topologically connected.

28. (original) A method according to claim 1, characterized in that occurrences caused by the presence of the creature (3) and/or the actions thereof are recorded.

29. (currently amended) A method according to claim 1, characterized in that information is transferred from the locating member (4) to the creature (3) via an information communicating means (7).

30. (currently amended) A method according to claim 1, characterized in that information is transferred from the creature (3) to the locating member (4) via an information receiving means (7).

31. (original) A method according to claim 29, characterized in that information about the viewing direction of the creature (3) is transferred.

32. (original) A method according to claim 29, characterized in that information about the movement direction of the creature (3) is transferred.

33. (original) A method according to any of claim 29, characterized in that information about the nature of the environment is transferred.

34. (original) A method according to claim 29, characterized in that information about movement paths (16) is transferred.

35. (original) A method according to claim 1, characterized in that information from the locating member (4) is transferred to at least one central computer unit (13).

36. (original) A method according to claim 1, characterized in that information from at least one central computer unit (13) is transferred to the locating member (4).

37. (original) A method according to claim 1, characterized in that information from the transducer (5) is transferred to at least one computer unit (13) of the locating member (4).

38. (original) A method according to claim 1, characterized in that information from at least one computer unit (11) of the locating member (4) is transferred to the transducer (5).

39. (currently amended) A method according to claim 35, characterized in that information is transferred to the creature (3) through [[a]] an information transferring means arranged in the environment and controlled by said computer unit (11, 13).

40. (currently amended) A method according to claim 39, characterized in that information from said information transferring means ~~in the environment~~ is transferred to the creature (3) through a representation unit (15) of the locating member (4).

41. (original) A method according to claim 1, characterized in that the nature of the environment is recorded by the creature (3) by means of a sensor.

42. (original) A method according to claim 1, characterized in that the position and/or orientation of the transducer (5) is determined by recording the relative incident directions of the signals received by means of the transducer.

43. (withdrawn) A method according to claims 2, characterized in that the position and/or orientation of the transducer (5) is determined by receiving incident optical signals from the signal sources (9) in the environment.